Title of Lesson: ***America in Space: German Voices From Huntsville, Alabama***
(Suggested grade level: 6 or11)

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Background Information:

Background information for teacher:

- Download the video showing parts of Kennedy's "We Choose to Go to the Moon" speech from http://www.youtube.com/watch?v=g25G1M4EXrQ.
- There is a list of German scientists who came to the United States as a result of Project Paperclip This list has links to other Web sites. In this lesson, the students will be instructed to conduct research on selected German scientists and their work at Redstone Arsenal.
- Several articles relating to the Wernher von Braun and the space program in Huntsville, Alabama, can be found at the Encyclopedia of Alabama Web site.
- Primary source photographs related to the Marshall Space Flight Center and Dr. Wernher von Braun can be found in the digitized collection of the Alabama Department of Archives and History:
    - Aerial view of the Marshall Space Flight Center
    - Man in space suit
    - Governor John Patterson, Dr. Wernher von Braun, and others at groundbreaking ceremony for University of Alabama in Huntsville
    - Governor George Wallace, Dr. Wernher von Braun, and Dr. James E. Webb examining a model at Marshall Space Flight Center
    - Dr. Wernher von Braun
    - Dr. Wernher von Braun in Apollo 11 parade in Huntsville
- A commemorative edition of the *Huntsville News* highlighting the achievements of Dr. Wernher von Braun
- Articles by Dr. Norwood Kerr of the Alabama Department of Archives and History about Alabama's role in the space program can be found at *Alabama Moments in American History*:
    - The Huntsville Space Program: Quick Summary
    - The Huntsville Space Program: Details
    - The Huntsville Space Program: Bibliography
- The Redstone Arsenal Historical Information Web site provides oral histories, photographs, and other primary sources.

Overview of lesson: This lesson will follow the path of Dr. Wernher von Braun and other German scientists from Germany to Huntsville, Alabama, and explore their role in the foundation and development of the United States Space Program. It will include a hands-on activity and technology activities.

Content Standards

***Alabama Course of Study:* Social Studies** (Bulletin 2004, No. 18)

Sixth Grade Standard 11, p. 46
Eleventh Grade: Standard 9, p.78

***National Standards for History*,** 1996
Standards in History for Grades 5-12 (p. 121)
Era 9, Standard 1 – The economic boom and social transformation of postwar United States

1C – The student understands how postwar science augmented the nation's economic strength, transformed daily life, and influenced the world economy.

Curriculum Standards for Social Studies, (Bulletin 111, 2010)
Standard 8 – Science, Technology, and Society (p. 150)

Social studies programs should include experiences that provide for the study of relationships among science, technology, and society.

Primary Learning Objective(s):
Students will demonstrate knowledge of the development and key figures of the U.S. Space Program and the role of Huntsville, Alabama.

Additional Learning Objective(s):
Alabama Occupational Diploma objective 11.9.1: Identify components of John F. Kennedy's New Frontier and Lyndon B. Johnson's Great Society. (New Frontier—space program)

Time allotted: 50 minutes

Materials and Equipment:

- Research guide (attached)
- *PowerPoint:* ***America in Space: German Voices From Huntsville, Alabama***
- Scrap material or colored bulletin board paper to make a border for the quilt
- Paper quilt pieces (These should be precut in interlocking shapes such as hexagons or squares.)
- Rubric for evaluating quilt pieces (attached)

Technological Resources:

- Computer with internet access
- *PowerPoint* (v. '97-2003) If you have a newer version, a viewer (free) can be downloaded from the internet.
- *Photo Story*
- Digital projector

Background/Preparation:

- The students should have an understanding of:
  - The election of John F. Kennedy as President of the United States
  - The basic goals of Kennedy's New Frontier

Procedures/Activities:

Engagement/Motivation Activity:

To introduce the lesson, the teacher may say, "On July 20, 1969, man first landed on the moon. That day Neil Armstrong became the first man to walk on the moon. The effort to land a man on the moon was led by a man

named Wernher von Braun, and today we are going to learn something about him and other German scientists who worked toward placing a man on the moon.

Imagine that you had to go some place to live that you had never been and you did not speak the language of the people who lived there. That is exactly what happened to Wernher von Braun. He was brought to the United States at the end of World War II along with 126 other German scientists. The United States wanted Wernher von Braun and the other scientists to live and work here because they knew so much about rockets. Dr. von Braun became the leader of the United States rocket program.

What do you think it was like for Wernher von Braun when he came to America and could not speak English?"

Give students time for discussion.

Step 1	The teacher will say, "Wernher von Braun was first sent to Texas where he began to learn to speak English. He and the other Germans who came with him were unaccustomed to the hot and dry climate of Texas where they were living. They were pleased when they learned they were moving to Huntsville, Alabama. In fact, Dr. von Braun exclaimed after seeing Huntsville, 'Oh, it looks like home. So green, so green, everything is so green with mountains all around.'"
Step 2	Explain to students that the impetus for the United States putting a man on the moon came from John F. Kennedy's New Frontier emphasis on the space program. Show the video clip of excerpts of Kennedy's "We Choose to Go to the Moon" speech. Allow students to respond to the challenge given by President Kennedy.
Step 3	Show slides one and two of *PowerPoint*. Remind students that Alabama was crucial to President Kennedy's space initiative due to the relocating of German scientists to Redstone Arsenal.
Step 4	Show slide three. Tell students, "Wernher von Braun became director of the Army's rocket development center at Redstone Arsenal, the forerunner of NASA's Marshall Space Flight Center."
Step 5	Show slide four. Tell students, "This is a partial list of the German scientists who came to America to work on the United States rocket development program."
Step 6	Show slide five. Tell students, "This photograph shows Wernher von Braun at the groundbreaking ceremony for the University of Alabama at Huntsville. Dr. von Braun was instrumental in conception and realization of a university-level education in the Huntsville community."
Step 7	Show slide six as example of the impact of the work of Dr. von Braun and the other scientists in the state of Alabama.
Step 8	Show slide seven which depicts the culmination of Kennedy's challenge to place a man on the moon by the end of the 1960s.
Step 9	The teacher will say, "Now we are going to research the efforts of Wernher von Braun and the other scientists whose work led to the first man landing on the moon." Students may conduct research in groups or individually. Provide students with the attached research guide.
Step 10	Review the steps necessary to conduct research on the internet. Remind students that not all Web sites are valid. Give students time to complete the research assignment.

Step 11	Have students summarize their research by creating quilt pieces, each showing a related picture and two contributions made by a German scientist. Allow students to place their quilt pieces within the displayed quilt border. **As an alternative assignment, students can create a *Photo Story* of their research rather than a quilt piece. (This is a FREE program that will allow students to combine research, narration, music, and photographs.)

Assessment Strategies:

- Grade quilt piece using attached rubric.
- Grade research guide for accuracy and completion.

Extension:

Students will choose or be assigned a pro or con position concerning the benefits or deficits of the U.S. Space Program to the citizens, politics, and economy of the United States. Students will research their position to prepare a media presentation, a research publication, or for a debate activity.

Remediation:

- Prior to lesson, provide students with list of key words and terms to be looking for while analyzing primary and secondary sources.
- Model historian skills.
- Provide lower reading level versions of content sources. When unavailable, the teacher may need to create a lower reading level version.
- A copy of the content source that has been discretely marked may be provided so that challenged students can focus on content rather than procedure, yet still develop historian skills.
- Provide multiple opportunities for students to demonstrate comprehension and mastery of appropriate learning objectives.
- Collaborate with appropriate case managers to determine specific strategies for challenged students and for gifted students.

Accommodation:

- Arrange peer tutor/partnerships during the lesson.
- Cue and guide students as necessary to locate key information during lesson.
- Provide lower reading level versions of content sources. When unavailable, the teacher may need to create a lower reading level version.
- A copy of the content source that has been discretely marked may be provided so that challenged students can focus on content rather than procedure, yet still develop historian skills.
- Provide multiple opportunities for students to demonstrate comprehension and mastery of appropriate learning objectives.
- Review Individualized Education Plans, Gifted Plans, 504 Plans, ELL Plans, etc for instructional and assessment accommodations or modifications.
- Identify appropriate objectives specific to individual students' needs as indicated by Individualized Education Plans, Gifted Plans, 504 Plans, ELL Plans, etc.
- Collaborate with appropriate case managers to determine specific strategies for challenged students.
- "Mission Booths" may be created or established for students who need isolation.

Modification:

- Review Individualized Education Plans, 504 Plans, and Gifted or ELL Plans for instructional and assessment accommodations or modifications.
- Provide multiple opportunities for students to demonstrate comprehension and mastery of appropriate learning objectives.

Research Guide for German Scientists in Huntsville, Alabama

Using the following Web sites, gather information about the German scientists who came to Alabama to develop rockets for the United States' defense and space programs. **You should locate and record at least four contributions** that each man made to the development of rockets for the United States

- http://www.nasa.gov/home/index.html
- http://www.nasa.gov/centers/marshall/home/index.html
- http://www.archives.gov/research/alic/reference/space-exploration.html
- http://www.museumstuff.com/learn/topics/List_of_German_rocket_scientists_in_the_United_States::sub::Operation_Paperclip_Scientists

Wernher von Braun
Konrad Dannenberg
Kurt H. Debus
Georg Von Tiesenhausen

After you have completed your research, design a quilt piece on the paper your teacher gives you. Your quilt piece should have:

- The name of the person you have selected to feature on your quilt piece.
- Two contributions that the scientist made toward putting a man on the moon.
- A picture of the person or a picture that relates to his achievements.

German Scientists in Alabama Quilt Rubric

Student Name _____

Directions:

- Using the following Web sites, gather information about the German scientists who came to Alabama to develop rockets for the United States' defense and space programs.
  - http://www.nasa.gov/home/index.html
  - http://www.nasa.gov/centers/marshall/home/index.html
  - http://www.archives.gov/research/alic/reference/space-exploration.html
  - http://www.museumstuff.com/learn/topics/List_of_German_rocket_scientists_in_the_United_States::sub::Operation_Paperclip_Scientists
- **You should locate and record at least four contributions** on the attached research guide that each man made to the development of rockets for the United States.
- After you have completed your research, design a quilt piece on the paper your teacher gives you. Your quilt piece should have:
  - The name of the person you have selected to feature on your quilt piece.
  - Two contributions that the scientist made toward putting a man on the moon.
  - A picture of the person or a picture that relates to his achievements.
- You must turn in the completed research guide with your quilt piece.

Category	4 points	3 points	2 points	1 point	Score
Required elements	Quilt piece clearly identifies the selected scientist and contains at least two pieces of information about him related to his work on rockets or the moon mission.	Quilt piece clearly identifies the selected scientist and contains two pieces of information about him but one fact is not related to his work on rockets or the moon mission.	Quilt piece identifies the selected scientist and contains at least one piece of information about him.	Several required elements are missing.	
Content	Facts included on the quilt piece are accurate and related to his work in Alabama. Information is given in the student's own words.	Facts on the quilt piece are accurate. Information is given in the student's own words.	At least one of the facts on the quilt piece is accurate. Information is given in the student's own words.	Inaccurate facts are included. Student copies information directly from other sources without giving credit.	
Attractiveness	Quilt piece has excellent design, layout, and visual impact.	Quilt piece has good design, layout, and visual impact.	Quilt piece is a bit messy but has acceptable design and layout.	Quilt piece is messy and poorly designed.	
Originality	Quilt piece is creative and shows a large amount of original thought.	Quilt piece demonstrates some original thought.	Quilt piece has little original thought in its execution.	Quilt piece lacks creativity and mimics other students' ideas.	
Research Guide	The research guide has four complete categories, with four contributions for each scientist.	The research guide has three complete categories, with four contributions for each scientist.	The research guide has two complete categories, with four contributions for each scientist.	The research guide has one complete category, with four contributions for the scientist.	

TOTAL _____